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ABSTRACT

A discussion is presented on classroom learning centers specifically designed to teach a concept, a unit, or a larger part of the curriculum. The four basic types of learning centers (diagnostic, enrichment, motivational, prescriptive) are described. Examples are given of how learning centers may vary, depending upon their objectives, and a variety of reasons why learning centers are used are cited. The question of where learning centers are used is considered with reference to space, size, and flexibility of the school, and cooperation by teachers where team teaching is accepted. The six ingredients of a typical learning center are delineated: (1) specific objectives; (2) step-by-step directions for activities; (3) a pre-test to determine the learner's general level of knowledge; (4) the activity or presentation of materials; (5) the post-test; and (6) keys to the two tests for evaluation purposes. Advantages of the learning center approach to teaching are pointed out in terms of how it improves teacher effectiveness. The five acts of individualized instruction are described: (1) listening; (2) observing; (3) diagnosing; (4) prescribing; and (5) evaluating. (JD)

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INDIVIDUALIZING INSTRUCTION THROUGH LEARNING CENTERS

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INDIVIDUALIZING INSTRUCTION THRCUGH LEARNING CENTERS

Introduction

Since the passage of the first nation's compulsory school attendance law in 1852 (Charles et al, 1978), American schools have been essentially a mass education enterprise. They have had to be that way in order to handle millions of students they serve within very limited budgets. This situation is not without its own problems. One of the most immediate and serious of the problems has to do with teachers' efforts to prescribe educational experiences that students would need at any particular given time. This situation can be illustrated by a situation in which a high school English teacher might have five sections with a total of 182 students. It might very well be that some of these students might be handicapped in one way or another. This being the case, the teacher might decide to individualize instruction in order to accommodate these special students. However, no matter what method of individualized instruction the teacher might use, it is likely to cost him or her more time, more effort and in some cases, the school district more money than the often followed practice of using a single textbook for all the students taking the same course.

The mandates stipulated in Public Law 94-142, the Handicapped or Mainstreaming law, almost compel teachers to individualize instruction for their special students who cannot work at the same pace as normal students. As a matter of fact, one of the five mandates of Public Law 94-142 has to do with the teacher's provision of Individualized Educational Programs (EIP's) for each special education student. Although this is the case, some teachers who do not have special education students in their classes, individulalize their instruction to motivate students. One of the ways teachers can use to individualize instruction is through the use of learning centers.

Learning Centers

A learning center is an activity specifically designed to teach a concept, a unit or a larger part of a given curriculum. This can take the form of an area in the classroom where individuals or small groups of students go to work on specific objectives of the area of the curriculum being studied. (Beach, 1977)

There are four basic types of learning centers a classroom teacher can use. These are the diagnostic, the enrichment, the motivational and the prescriptive centers. The diagnostic center is designed to determine how much the student knows or does not know about the concept of the center, while the enrichment center is intended to enrich the students' fund of knowledge about the topic. The last type, the prescriptive center which is very much like a doctor's prescription, is used to remedy a problem or deficiency a student might have.

Learning centers may vary, depending upon their express objectives. For example, a learning center might be developed to do any or all of the following things:

1. Teach a specific skill such as classifying different kinds of leaves according to their typical characteristics.
2. Encourage the development of thinking skills, through creative writing.
3. Employ techniques designed to capture students' enthusiasm and to motivate them to learn at their own individual paces.
4. Provide extra learning opportunities for fast as well as slow learners.
5. Create direct sensory experiences to which words or ideas can be attached and learning skills can be developed.

6. Meet the educational needs of students at different levels.
7. Reinforce ideas or concepts already covered in class or in a textbook.

Depending upon the nature of the learning center, learning centers can be set up in any part of the classroom such as the floor, on tables or on walls. In setting up centers, it is important to set them up in areas where class activities occur the least.

A variety of reasons why learning centers are used can be cited. Below are some of these important reasons:

1. Research studies such as those of Jean Piaget indicate that students learn only when they are ready. The use of learning centers then provides the opportunity for students to learn under options tied to learning readiness. (Gage and Berliner, 1979)
2. Studies also show that people learn at different paces. By using learning centers, teachers can provide for these individual differences among students.
3. Learning centers enable teachers to maximize the process of individualizing the components of the curriculum to meet the needs of students of different abilities.
4. Learning centers can provide students with the opportunity to discover, explore and investigate knowledge areas of their interest.
5. Learning centers provide an opportunity for students to succeed and to learn from the known to the unknown.
6. Because of their very nature, learning centers allow students to be engaged in curricular activities in which they develop skills in decision making.

It is just as incorrect to think that all ninth grade girls or boys should learn the same material in the same way at the same time, as much as it is to think that they should wear the same size clothes. This fact then is the more reason why learning centers should be used, since they provide students with individual learning opportunities.

Conditions under which learning centers could be used.

The question, "Where are learning centers used?", is a very appropriate one at this point.

1. Although schools with flexible or open spaces provide the most obvious situations in which learning centers can be established, any teacher in any school facility can use learning centers.
2. A team teaching arrangement can provide a very appropriate situation for teachers with a variety of creativity and imaginative abilities to pool their resources together.
3. Opportunity also lies in a traditionally self-contained classroom situation in which the teacher can set up learning centers to individualize instruction.
4. Learning centers can be used on a school-wide basis. In this kind of situation the individual teacher's commitment becomes a very important factor, for without this commitment the idea might be a disaster.

A typical learning center should have six ingredients. These are: the specific objectives, the directions, the pre-test, the activity or presentation, the post-test, and the keys to the tests. The specific objectives are intended to inform the learner about the outcome or end of the experience. Because of the diversity and varying degrees of complexity found in learning centers, a step by step set of directions should be part of any center. The pre-test is designed to determine the learner's general level of knowledge of that

particular subject. The third ingredient, the activity, which may be in the form of written material or multi-media presentation, is designed to help the learner achieve the objectives of the center. In some cases the presentation may be punctuated by short quizzes or exercises which are intended to reinforce what is being learned or to check the user's level of comprehension of the materials. The post-test which may be the same as the pre-test or a completely different set of questions or items is usually intended to find out how much the learner has gained from the activity or presentation. The keys to the two tests are a very essential part of a learning center because the user would need this form of evaluative criterion.

Steps in the development of a learning center:

1. The development and eventually the implementation of learning centers involves a comprehensive planning process. Once a learning center topic has been identified, the skills and major points of the content should be stated as objectives. These objectives would then form the basis upon which the center is built. An example of an objective would be:

   "Upon the completion of the activities at this center, the student should be able to identify the major parts of a microscope, prepare a microscope slide, and to put the slide on the microscope and bring the specimen into focus."

2. Once the objectives have been determined, the teacher then selects the activities that will enable the student to achieve them. These activities should be varied in such a way that they bring success to all students while at the same time challenging the more advanced students. The teacher should try to match the activities with the students' abilities, interests, needs and experiences. Multi-media materials such as films, filmstrips, pictures, slides, records, tapes, games, and printed materials always make successful learning center activity components. The end product

of any center is always in written form, irrespective of the nature of the activity.

3. The next step involves writing down some clear and concise directions for the users. If this step is done correctly, there would virtually be no need for the teacher to be around the center when students are using it. Directions should always be in an active or behavioral form. A few examples are listed below:

    a. Take the pre-test to find out how much you know about the learning center topic.

    b. Turn the tape recorder on by pressing the button labeled "play."

    c. Listen to the entire recording before attempting to take the post-test.

    d. Take the post-test.

    e. Using the test keys provided, grade both the pre-test and the post-test and score your totals.

4. The last step involves the construction and setting up of the center in the appropriate place. These centers could be set up on tables, desk tops, classroom corners, bulletin boards and any such place as deemed fit by the teacher. Careful use of color, print, and muscial creative arrangements to attract or catch the eye of the user would be highly recommended.

Advantages of using learning centers:

The learning center approach to teaching has a number of advantages. It allows the classroom teacher to do the following:

1. Select a concept or topic within a subject area (for instance: English grammar, proper use of capital letters, math, equations, Social Studies, the Bill of Rights, Health, or drug abuse).
2. Individualize his or her instruction.
3. Teach basic content or factual information.

4. Work with students who need personal or individual attention.
5. Encourage students to be actively involved in a participatory manner.
6. Diagnose learning problems and prescribe some remedy.
7. Provide an opportunity for students to explore or research topics in areas of their interest.
8. Allow students to create a new product using information gained from the learning center activities.

According to some educators (Callahand and Clark, 1977) individualized instruction can be divided into five acts of (1) listening, (2) observing, (3) diagnosing, (4) prescribing, and (5) evaluating. Each of these five acts will be discussed briefly in terms of its relationship to the concept of individualized instruction.

Act I - Listening. Teachers who are naturally verbal and enjoy doing most of the talking in the classroom find it extremely difficult to listen. Even though this is true, listening, on the teacher's part can be a very valuable way of collecting information for developing learning center activities for students. It is through listening that teachers can understand the dynamics of their students' command of the languages or the availability of similar materials for learning centers. Teachers who make a deliberate effort to listen to their students' expression of their ideas and feelings will no doubt find numerous opportunities to gather data especially for diagnostic kinds of learning centers.

Act II - Observing. Overt behavior which deals with the affective domain of learning as illustrated in Benjamin Bloom's texonomy of objectives can be detected by careful observation by the teacher, of the student's behavior. The observation affords the teacher to assess the extent to which skills dealing with this domain have been mastered by the students. The teacher must

be able to observe the dynamics of student interactions between and among themselves. Psychologists do agree that the way a student acts very much reflects his or her concept of self. It is through careful observation of students by their teachers, that teachers can detect negative behavior which may be a result of apathy, depression, or lack of motivation. It is after observing these negative signs that teachers can then begin to develop individualized instructional units such as motivational learning centers to help these students get out of their predicament, or to at least reduce its severity.

Act III - Diagnosing. Perhaps the most difficult of the four types of learning centers to develop and construct is the diagnostic type. This difficulty has to do with the fact that it is very difficult to precisely pinpoint students' learning problems. Part of this problem stems from the fact that some students have a wide range of problems ranging from physical to mental disabilities. If some students' problems are as obvious as poor eyesight or hard of hearing or being confined in a wheelchair, then the teacher can deal with the situations without much strain. But, if the students' problems are such that they originate from the general area of lack of reading ability skills, then the teacher has a much more difficult job to do. It is these educational problems that are not directly related to external sense organs that are not so obvious to detect.

No one can expect teachers who themselves are not medical or psychiatric diagnosticians to do what they are not trained to do. Nevertheless, after observing signs of deficiencies, the teacher can develop and utilize a learning center which deals with material intended to systematically diagnose student's problems before dealing with them in a professional manner.

Act IV - Prescribing. Because of the problems inherent in the diagnostic process of students' learning problesm, a shotgun approach is highly recommended (Callahan and Clark, 1977). In this approach, instead of dealing with the students' reading problems, a teacher may prepare extensive learning centers dealing

entirely with remedial reading concepts. In this case, learning centers in the form of learning packets always prove to be effective.

Act V - Evaluating. After it's all said and done, it becomes necessary to evaluate the effectiveness of the motivational, diagnostic, or prescriptive learning centers a teacher might have used. The evaluation might take various forms such as written tests, performance tests, oral demonstration of achieved objectives, or similar methods.

Ideal Conditions for Individualization

In order to successfully individualize instruction in a classroom situation, there needs to be an ideal working atmosphere. As a general rule, this atmosphere is typified by positive attitudes.

First, there should be positive attitudes toward all the people involved in the instructional process. Students' self concept is to a great extent a key to acceptance of each other on the part of the teacher and the students.

Second, the teacher and students ought to accept each other in spite of their differences. Even though the teacher and students might differ in their cultural or ethnic backgrounds, values or social status, a considerable degree of conformity to rules or structure becomes a prerequisite to individualized instructional activities. The teacher should accept student's exceptionality and should always try to utilize students' uniqueness for the benefit of the whole class.

Third, for individualized instruction to work, both teachers and students have to have positive attitudes toward learning. Positive attitude alone on the teacher's part is not enough for the attitude has to be such that it is also reflected in the way he or she handles materials or topics in different subject areas. A teacher who is always widening his or her educational horizon by reading, researching, and attending professional workshops or conferences is likely to succeed in building in his or her students an attitude of respect for learning and knowledge.

Finally, students' contributions toward class activities must be honored and respected for their value. The teacher should strive to encourage students to bring in current issue topics for discussion or exploration. Teachers who encourage students' contributions are no doubt likely to enrich students' lives.

Conclusion

Since the inception of the concept of individualized instruction, about seven approaches have been used. These are student contracts, team teaching, programmed instruction, modular scheduling, tutorial methods, electronic evaluation, and learning packets or centers. With the advent of computers in school environments, it has become even more possible to individualize instruction.

AN EXAMPLE OF A LEARNING CENTER

Following is an example of a learning center on APPLES:

DIRECTIONS

1. Take the pretest.
2. Read through the entire learning center carefully.
3. Take the post-test.
4. Check your answers with the answer key and hand in both of your graded tests.

OBJECTIVES

By the end of this learning center the students will be able to:

1. Identify different kinds of apples.
2. Identify specific considerations to be made when buying apples.
3. List important things to watch for in selecting apples.
4. List important things to be remembered when keeping apples in their homes.
5. Summarize important facts about apples.

PRE-TEST

TRUE OR FALSE

Write "T" against statements you feel are true and "F" against the ones you feel are false.

_____ 1. Apples symbolize good health, good eating, and success.

_____ 2. Some apples grow on bushes.

_____ 3. Apples come in three colors - red, green and yellow.

_____ 4. Three common types of apples are Golden Delicious, Jonathan, and McIntosh.

_____ 5. There is no variety of apples that are good for salads, pies, sauces and baking.

_____ 6. Large apples, 3" and up, are perfect for baking.

_____ 7. A medium size apple only contains fifty calories.

_____ 8. Three medium-sized apples equal about three cups of peeled, sliced or diced apples.

_____ 9. Apples are relatively low in calories, vitamins and minerals.

_____ 10. Apples are considered to be "Natures toothbrush."

PRESENTATION

Apples are America's #1 fruit. They come in many forms; fresh, dehydrated, dried and frozen.

Apples have been nicknamed "The King of Fruits". They symbolize good health, good eating and success. Although much has changed since Adam and Eve roamed the Garden of Eden, this fact has remained constant - apples are a tempting fruit. They come in a number of varieties and have a number of uses.

Apples for the table are charactierized by firm pulp, a sweetish acid flavor, regular form, and beautiful coloring. For cooking, use those apples that have the property of forming by the acid of heat into a pulpy mass of equal consistency. Apples for cider must have a considerable degree of astringency, with richness of juice. Cider, the fermented juice of the apple, is a favorite drink in many parts of the United States.

No one description fits all apples, except that they grow on trees. Apples come in different flavors - tart, sweet, or mellow, and have different textures - crisp, hard, juicy or snappy.

WHEN YOU BUY...

The main considerations when buying apples is how they will be used. Although there's no hard and fast rule about apples, certain varieties have become traditional favorites for eating raw, cooking or baking. The following is a list of the most popular ones and their recommended uses:

Variety	Out of hand, in salads	Pies and sauces	Baking	Taste and Texture
Cortland	X	X	X	Mild, tender
Golden Delicious	X	X	X	Sweet, semi-firm
Gravenstein	X	X	X	Tart, crisp
R.I. Greening		X	X	Slighty tart, firm
Jonathan	X	X		Tart, tender
	X	X		Slightly tart, tender
McIntosh	X			Sweet, mellow
Rome Beauty	X	X	X	Slightly tart, firm
Stayman	X	X	X	Tart, semi-firm
Winesap	X	X	X	Slightly tart, firm
York Imperial		X	X	Tart, firm

HOW TO SELECT...

Fresh apples are sold in convenient plastic bags, in film-wrapped trays or loose. Apples should be bright in color, but need not shine, since shininess is no indication of quality. The skins should be smooth and reasonably bruise-free (Don't pinch it because it tells you nothing and mars the fruit) and the feel should be firm.

Apples measuring about 2½" or more in diameter are ideal for general all-round use. Larger apples, 3", and up, are perfect for baking. But don't pass up smaller sizes because they can be used in many ways and can offer quality at more economical prices.

KEEPING AT HOME...

Keep apples in top condition by handling gently to prevent bruises. Use any damaged apples as soon as possible. When storing quantities, place apples in a plastic bag and store in cool, dark, airy place. Warm temperatures cause apples to rapidly lose their crispness and flavor, so make sure you give apples the cool treatment.

Apples are wholesome and superably satisfying, especially for calorie counters who crave royal treats. A medium size apple (2½ inches in diameter) has 90 calories. Apples are well-balanced in both vitamins and minerals. And don't forget what a friend apples are in your mouth. Known as "Natures toothbrush," apples clean the teeth, massage the gums and can help reduce the chance of dental cavaties.

TIPS...

Spices that enhance the flavor of apples are: cinnamon, cloves, nutmeg and ginger.

Apples are a great snack pick-me-up since they provide quick energy with relatively few calories.

Count on about three medium-sized apples to a pound of unpeeled apples to yield about three cups of peeled, sliced or diced fruit.

To keep apples from discoloring: place slices as they are peeled into a pan of cold water and add a pinch of salt for each whole apple used, or sprinkle generously with fresh lemon.

Apple pies overflow with goodness, but sometimes it's too much of a good thing. If pie spills into a hot oven, sprinkle spilled juice with salt and allow to burn crisp. Clean-up will be a breeze.

POST-TEST

TRUE OR FALSE

Write "T" against statements you feel are true and "F" against the ones you feel are false.

____ 1. Apples are the #1 fruit in America.

____ 2. Apples are characterized by firmness of pulp, acidic flavor and color.

____ 3. Cider, the fermented juice of apples, is a favorite drink in the United States.

____ 4. Apples come in different colors - red, green, golden, mottled or striped.

____ 5. The main consideration when buying apples is how they will be used.

____ 6. Don't buy apples smaller than 2½". In the long run they are not economical.

____ 7. A quality apple has smooth skin and is bruise-free.

____ 8. Warm temperatures are not good for apples. Warmth causes the apples to lose their crispness and flavor.

____ 9. Apples are relatively low in calories, vitamins and minerals.

____ 10. Apples are considered to be "Natures toothbrush".

KEY

PRE-TEST	POST-TEST
1. T	1. T
2. F	2. T
3. F	3. F
4. T	4. T
5. F	5. T
6. F	6. F
7. T	7. T
8. F	8. T
9. F	9. F
10. T	10. T

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